

CLAIMS

What is claimed is:

- 5        1. A method of cutting segments to desired lengths from a strip of elastomeric material, the segments has a width W, the elastomeric strip being formed of a plurality tire components, at least one of the tire components being a cord reinforced component, the cords being substantially parallel and oriented in the direction of a cutting path formed across the width W of the strip; the method comprising:
  - 10                moving on ultrasonic knife into cutting engagement of the elastomeric strip while supporting the strip along the cutting path;
  - cutting the segment at a skive angle  $\alpha$ ; and
  - impacting a cord of the cord reinforced component lifting said cord over the ultrasonic knife as the segment is being cut, the impacted cord being at a cut end adjacent the cutting path.
- 15        2. The method of cutting segments of claim 1 further comprises the step of: orienting a cutting edge on the ultrasonic knife inclined at an acute angle  $\beta$  relative to the strip cutting path.
- 20        3. The method of cutting segments of claim 1 further comprises the steps of movably restraining the strip ahead of the cutting.
- 25        4. The method of cutting segments of claim 1 wherein the steps of supporting the strip including supporting the strip at an angle  $\theta_1$ , less than the skive angle  $\alpha$  on one side of the cutting path and an angle  $\theta_2$  greater than the skive angle  $\alpha$  on the opposite side of the cutting path.
- 30        5. The method of cutting segments of claim 4, wherein the location of the impacted cord occurs approximately at the location wherein the supporting angle changes for  $\theta_1$  to  $\theta_2$ .

6. The method of claim 2 further comprises the step of positioning the cutting edge of the ultrasonic knife at a gap distance (d) above the strip slightly less than or slightly to the greater than thickness of the cord reinforced component.

5 7. The method of claim 6 wherein the step of cutting further includes cutting the segment wherein a plurality of cords are beneath and adjacent a flat cut surface.

10 8. A segment formed by the method of claim 1 comprises a first cut end; the first cut end having a cut splicing surface extending outward from the cord reinforced component.

9. The segment of claim 8 wherein the first cut end and second cut end form a lap splice joint having one or more over lapping cords adjacent a flat cut surface.

15 10. An apparatus for cutting segments from a strip of multi-layered elastomeric material containing reinforcing cords, the cords being substantially parallel and more or less oriented in the direction of a cut path, the apparatus characterized by:

20 (a) a cutting element for cutting the strip to form cut ends, the cutting element having a cutting edge oriented to cut along a line, the line being tangent to one or more cords and inclined at a desired skive angle  $\alpha$ ;

(b) a means for supporting the strip along the cutting path, the means for supporting having a first surface oriented at an angle  $\theta_1$  less than the skive angle  $\alpha$  and a second surface oriented at an angle  $\theta_2$  greater than or equal to the skive angle  $\alpha$ ;

25 (c) a means for restraining the strip against the means for supporting the means or restraining being located ahead of the cutting element; and

(d) a means for moving the cutting element and the means for restraining.

11. The apparatus for cutting wherein the cutting element has the cutting edge inclined at an acute angle  $\beta$  relative to the width, the cutting edge oriented to initiate cutting on the surface furthest away from the means for supporting the strip.

5 12. The apparatus of claim 10 wherein the skive angle  $\alpha$  is about  $10^\circ$  or less adjacent the one or more cords.

13. The apparatus of claim 12 wherein the angle  $\theta_1$  is about  $2^\circ$  less than  $\alpha$ .

10 14. The apparatus of claim 13 wherein the angle  $\theta_2$  is about  $2^\circ$  more than  $\alpha$ .

15. The apparatus of claim 13 wherein  $\alpha$  is about  $8^\circ$ .

16. The apparatus of claim 10 wherein the cutting element is an ultrasonic  
15 knife.

17. The apparatus of claim 16 wherein the cutting element has a flat or planar surface adjacent the supporting means.

20 18. The apparatus of claim 17 wherein the cutting element has a wedge shape increasing in thickness from the cutting edge.

19. The apparatus of claim 10 wherein the means for supporting the strip include a vacuum means for adhering the strip to the means for supporting.